

# **Alberta Transportation**

## **Environmental Protection Plan for the Planning and Construction of Water and Transportation Projects**

**January 9, 2009**

---

## Table of Contents

	Page
Table of Contents.....	i
<b>1.0 INTRODUCTION.....</b>	<b>1</b>
1.1 EPP Objectives.....	1
1.2 ECO Plan.....	1
1.3 Legislation, Guidelines and Criteria.....	1
<b>2.0 AREAS OF SPECIAL ENVIRONMENTAL INTEREST .....</b>	<b>2</b>
2.1 Habitat for Species at Risk and Rare Species.....	2
2.2 Parks and Protected Areas.....	2
2.3 Historical Resources.....	2
<b>3.0 ENVIRONMENTAL CONTINGENCY PLANS.....</b>	<b>3</b>
3.1 Erosion and Sediment Control.....	3
<b>3.0 ENVIRONMENTAL PROTECTION MEASURES .....</b>	<b>4</b>
3.1 Work Schedule .....	4
2.4 Seasonal shutdown .....	4
3.2 Protection of Wildlife and Wildlife Habitat.....	5
3.3 Clearing Vegetation.....	5
3.4 Weed and Invasive Species Management .....	6
3.5 Handling and Storage of Soil.....	7
3.6 Wetlands and Watercourses .....	8
3.7 Fish and Fish Habitat.....	11
3.8 Air Quality Management .....	11
3.10 Handling and Storage of Petroleum, Oil, Lubricant and other Chemicals .....	12
3.11 Management of Waste .....	13
3.12 Constructing and Operating Borrow Excavations.....	13
3.13 Operating Concrete Batch Plants.....	14
3.14 Operating Asphalt Plants.....	14
3.15 Construction and Operation of Work Camps.....	14
<b>4.0 MONITORING AND INSPECTION .....</b>	<b>14</b>
4.1 Self Regulatory Inspection.....	14
4.1.1 Construction Monitoring.....	15
4.1.2 Post Construction Monitoring.....	15
4.2 ECO Plan Audits.....	16

### Appendix A - PROJECT SPECIFIC ENVIRONMENTAL MEASURES

---

## **1.0 INTRODUCTION**

Alberta Transportation (the Department) is committed to the construction of highway and water projects in a manner that protects the environment. This Environmental Protection Plan (EPP) outlines the standard measures the Department uses to prevent or mitigate environmental impacts resulting from construction activities (Sections 1-4) and identifies project-specific considerations to be implemented (Appendix A).

### **1.1 EPP Objectives**

The objectives of the EPP are twofold as described below.

- Provide environmental regulatory agencies with a description of environmental protection measures that the Department's Consultants and Contractors will follow during construction of transportation and water projects.
- Provide Consultants and Contractors with a list of environmental protection measures to be utilized on the work site. The EPP must be addressed by the Contractor when developing ECO Plan. Any amendments to the EPP by the Consultant must be clearly identified in Appendix A.
- The items addressed in Sections 1-4 of the EPP do not need to be duplicated in ECO Plan if the EPP is attached to the project-specific ECO Plan.

### **1.2 ECO Plan**

A site specific ECO Plan will be prepared by the Contractor in accordance with the Department's ECO Plan Framework. The ECO Plan is a Contractor's plan for the identification and mitigation of environmental impacts that may occur as a result of their activities. Any amendments to the EPP by the Contractor must be clearly identified in the ECO Plan. The ECO Plan will be reviewed by the Department and/or the Consultant representatives prior to commencing construction. The Contractor will ensure effective implementation of his ECO Plan.

### **1.3 Legislation, Guidelines and Criteria**

The lists of the federal, provincial and municipal environmental regulatory requirements that relate to the Department's key environmental activities are included in *Alberta Transportation's Environmental Management System Manual*.

The EPP is to be used in conjunction with the following documents:

---

- 
- *Alberta Transportation Environmental Construction Operations (ECO) Plan Framework.*
  - *Engineering Consultant Guidelines For Highway and Bridge Projects Volume 1 Design and Tender, Section 4 Environmental Considerations.*
  - Special Provisions as outlined in the Tender Document.
  - *Alberta Transportation's Environmental Management System Manual.*
  - *Department specification manuals.*

## **2.0 AREAS OF SPECIAL ENVIRONMENTAL INTEREST**

### **2.1 Habitat for Species at Risk and Rare Species**

There are federal and provincial requirements associated with the protection of species at risk, rare species and their habitat. The ECO Plan will identify the relevant migratory bird timing windows and appropriate setback distances where construction related activities are not to take place. In the event that designated at-risk species are encountered during construction, the Consultant will be notified, and Alberta Sustainable Resource Development (ASRD) and/or Environment Canada contacted for advice.

Any Right-Of-Way (ROW) accesses, any approved temporary workspaces and environmentally sensitive sites within the ROW will be clearly identified by staking or flagging prior to the start of construction and all activities will occur with the implementation of appropriate mitigation measures outlined in this EPP.

### **2.2 Parks and Protected Areas**

In the event a project is located within or adjacent to a park or protected area there may be additional mitigative measures that are required. Special conditions or concerns, identified by the regulators, will be included in the ECO Plan and Special Provisions.

### **2.3 Historical Resources**

In the event any historical, archaeological or paleontological resources are encountered during construction, Alberta Culture and Community Spirit will be contacted immediately for its decision on any mitigative action required. Mitigations, if required, could include flagging the site and suspending construction within the flagged area, documentation of the resource and recovery of the artifacts by a qualified expert.

---

### **3.0 ENVIRONMENTAL CONTINGENCY PLANS**

The ECO Plan Framework will identify potential incidents that, through natural causes, accidents, human error or improper work practices, affect the environment. Environmental contingency plans must be developed to describe the potential incident and the procedures that will be implemented to address the incident.

In general environmental contingency plans, will be considered for the following topics and developed if applicable:

- Emergency Response Procedures,
- Contaminant Spills and Releases,
- Erosion Events,
- Historical Resources Discovery, and
- Forest Fires.

#### **3.1 Erosion and Sediment Control**

Erosion and sedimentation can occur at any time during project construction. The highest potential for erosion occurs during clearing, grading and wetland/watercourse activities. Specific mitigative measures for the protection of the topsoil resource and water quality from erosion and sedimentation are outlined in Sections 3.5, 3.8 and 3.6, respectively.

The following are general practices to be implemented to prevent or minimize impacts of erosion and sediment.

- (a) Sediment and erosion control measures will be implemented prior to work and maintained during the work phase until the site has been stabilized. The sediment and erosion control measures will be inspected regularly.
- (b) Design Guidelines for Erosion and Sediment Control for Highways (Alberta Transportation, 2003) will be followed.
- (c) The Contractor will be knowledgeable about project authorizations and will include relevant terms and conditions in their ECO Plan. The Consultant will be notified of changes and modifications to Erosion and Sediment Control (ESC) measures in the ECO Plan prior to implementation.
- (d) Any deterioration/damage to silt fence or other ESC measures will be repaired as soon as possible or operations will be ceased until repairs are completed.

- 
- (e) Sufficient quantities of ESC supplies (such as silt fence or geotextile fabric) will be maintained on site such to address any issues as the work progresses.
  - (f) Erodible soils will be stabilized in a timely fashion after grading is completed.
  - (g) Surface runoff will be directed to vegetated areas where possible, or settling ponds as required. Existing drainage provisions for the existing highway will be used where possible.
  - (h) A construction monitoring and inspection program will be implemented to ensure ESC measures are in place and in good working order. Should a storm event be predicted, all installed ESC measures will be inspected and additional controls implemented as necessary.
  - (i) Extra caution will be exercised in areas of steep slopes, erodible soils, wet areas, and watercourses.

#### **4.0 ENVIRONMENTAL PROTECTION MEASURES**

##### **4.1 Work Schedule**

A project work schedule will be included or referenced in the ECO Plan. The purpose of the work schedule is to ensure that regulatory requirements are incorporated into the scheduling of work activities.

##### **4.1.1 Preparation for Seasonal Shutdown**

Environmental protection measures required for shutdown periods will be included in the ECO Plan. In the case of seasonal shutdown, the Contractor will revise the ECO Plan to include the following environmental protection measures:

- (a) Outline procedures for monitoring and maintaining the project site during the shutdown period.
- (b) Cover/protect highly erodible sites.
- (c) Clean out all sediment ponds, basins and traps.
- (d) Install and maintain runoff control measures to minimize work site erosion potential.
- (e) Install and maintain perimeter control measures to minimize off-site sedimentation potential.

- 
- (f) Implement an inspection and maintenance plan to ensure erosion and sediment control measures are in place and effective.

#### **4.2 Protection of Wildlife and Wildlife Habitat**

Federal and provincial legislative requirements associated with the protection of wildlife and wildlife habitats are outlined in *Alberta Transportation's Environmental Management System Manual*. The following practices will be implemented to prevent or minimize impacts to wildlife and wildlife habitat:

- (a) Any incidence of problem animals in the vicinity of the project will be reported to local ASRD officials.
- (b) Construction vehicle collisions with wildlife will be reported immediately to ASRD.
- (c) Construction personnel will not interfere with wildlife. Firearms and pets are not permitted on the project site and no hunting, trapping or fishing will be allowed on the project site.
- (d) No one will disturb, move or destroy migratory bird nests. If a nest or young birds are encountered, the Contractor will cease work in the immediate area of the nest and inform the Consultant. The Consultant will notify ASRD and Environment Canada and wait for direction from these authorities prior to resuming work in the area of the nest or young birds.
- (e) All refuse will be disposed of at an approved landfill facility. Refuse stored on site prior to removal will be stored in closed containers.
- (f) Improper removal of beaver dams can result in the discharge of excessive amounts of sediment and water causing impacts on downstream fish and wildlife habitat. The Contractor will include relevant conditions from the necessary approvals into the ECO plan to prevent unplanned environmental damage.

#### **4.3 Clearing Vegetation**

Federal and provincial legislative requirements associated with the clearing of vegetation are outlined in *Alberta Transportation's Environmental Management System Manual*. The following practices will be implemented to prevent or minimize impacts of vegetation clearing.

- (a) Clearing and grading of natural vegetation on slopes greater than 30% will be minimized wherever feasible, recognizing the unstable nature of coarse-textured soils and steep slopes.

- 
- (b) Appropriate ESC measures will be immediately applied when clearing vegetation where there is a risk of causing environmental damage to sensitive receptors.
  - (c) Areas used for the disposal of brush, timber or logs removed in the clearing operation will not obstruct drainage patterns and runoff from the disposal areas will not cause siltation of any streams or wetlands.
  - (d) Trees will be hand felled away from wetlands within the riparian zone. Trees and slash inadvertently introduced into any wetland will be removed immediately.
  - (e) Retain an undisturbed vegetation buffer between the construction site and watercourse to reduce the potential for sedimentation. The buffer will be fenced using silt fence or a similar barrier, to prevent equipment and machinery from encroaching into protected areas.

#### **4.4 Weed and Invasive Species Management**

Requirements associated with managing weeds and invasive species are outlined in *Alberta Transportation's Environmental Management System Manual and the Department's specifications manuals*. The following practices will be implemented to prevent or minimize weed and invasive species impact.

- (a) Noxious and restricted weeds will be controlled by mowing where feasible and/or by the application of herbicides by a licensed pesticide applicator.
- (b) Persistent use of residual herbicides will be avoided, to the extent possible, to prevent herbicide accumulation in the soil which impedes revegetation success.
- (c) All equipment and materials will be clean of weeds.
- (d) If soil amendments are required, they will be selected from a source free or low in invasive vegetation seeds.
- (e) Exposed soil will be revegetated to prevent invasive plant establishment.
- (f) Fertilizer will not be used where native grass species are selected for regenerative purposes.
- (g) Seed analysis certificates will be reviewed for non-native and invasive vegetation presence and composition prior to use. Seed containing restricted or noxious weeds will not be accepted for use.



- 
- (h) Reclaimed/revegetated areas will be inspected for presence of restricted or noxious weeds. Identified weeds will be controlled using methods that do not jeopardize the health of desired plant species.

#### **4.5 Handling and Storage of Soil**

Requirements associated with the handling and storage of soils are outlined in *Alberta Transportation's Environmental Management System Manual and the Department's specification manuals*. The following practices will be implemented to prevent or minimize impacts to soils:

- (a) Topsoil will be conserved. Topsoil will not be used for road bed material.
- (b) Topsoil will be stockpiled separately from subsoil stockpiles.
- (c) In areas of native grassland, topsoil will be salvaged, stockpiled and replaced separately from other areas, to protect the seedbed and enhance revegetation.
- (d) Topsoil will be stripped to the depths indicated on the stripping plan or as otherwise directed by the Consultant. Topsoil salvage will only be undertaken during daylight hours to ensure depth of topsoil can be identified.
- (e) Topsoil will be stripped and replaced under non-frozen and non-saturated soil conditions. If topsoil must be stripped under frozen and/or saturated soil conditions due to timing constraints or site conditions, a topsoil handling plan specific to the locations and conditions encountered will be prepared prior to commencing topsoil stripping activities.
- (f) If topsoil is to be stockpiled for periods exceeding two months the Contractor will protect the stockpile from erosion. Where persistent high winds are eroding soil berms or piles, or removing topsoil from the ROW, contingency measures to stabilize the soil shall be implemented.
- (g) When handling wet or saturated topsoil extra care will be taken to minimize damage to the soil structure.
- (h) For all areas to be revegetated, visual evidence (e.g., rutting) and compaction testing (e.g., shovel penetration) will be used to determine if there are compaction problem areas. Compaction will be relieved to a depth identified by the Consultant.
- (i) Equipment travel and operation will be suspended or modified where rutting problems on wet ground are jeopardizing topsoil structure and integrity.

- 
- (j) Where suitable topsoil exists on stream banks or approach slopes, it will be stripped and stockpiled separately.
  - (k) Stockpiles of topsoil and spoil material will not be placed in areas where damage to sensitive receptors can occur.
  - (l) Special handling requirements may be necessary during construction for soils with saline properties, or gravelly or very stony subsoil. When alternative soils handling is required, a qualified soil specialist will be called upon to inspect soils and to advise on appropriate soils handling measures.
  - (m) Rocks, roots, stumps, slash or debris over 70mm in dimension will be removed from the topsoil prior to completion of the work and disposed of in an appropriate manner.
  - (n) Soil amendments will be applied when needed to return soil capability.

#### **4.6 Wetlands and Watercourses**

##### **4.6.1 Wetlands**

Federal and provincial legislative requirements associated with the protection of wetlands are outlined in *Alberta Transportation's Environmental Management System Manual*. The following practices will be implemented to prevent or minimize impacts to the wetlands.

- (a) The Contractor will minimize any disturbance to aquatic resources during construction. Draining, infilling or alteration (including vegetation clearing) of wetlands will be conducted in accordance with the conditions of the Water Act approval.
- (b) Design Guidelines for Erosion and Sediment Control for Highways (Alberta Transportation, 2003) will be followed. ESC measures will be implemented prior to work to prevent sediment from entering the wetland. The ESC measures will be inspected regularly.
- (c) When permitted, crossings will be restricted to a single location and will occur perpendicular to and at a narrow point on the wetland. Brush matting, swamp matting, ice bridges and floatation tires on vehicles will be used when crossing as dictated by regulatory approvals and site conditions.
- (d) A fuel/deleterious substance spill response plan will be in place. An emergency spill response kit will be kept on-site during construction.

- 
- (e) Trees will be hand felled away from wetlands within riparian areas. Trees and slash inadvertently introduced into any wetland will be removed immediately.
  - (f) Grading will be controlled as much as practical near wetlands. No windrowed or fill material will be placed in the wetland during grading. Surface disturbances, such as grading and vegetation clearing will be kept to a minimum, recognizing the sensitivities associated with wetlands.
  - (g) Where suitable topsoil exists on wetland perimeters, it should be stripped and stockpiled separately, according to directions from the Consultant.
  - (h) Riparian areas along major watercourse banks will be revegetated in appropriate areas according to detailed design, or as otherwise stated in Authorizations/ Approvals issued by DFO and AENV. Fertilizer will not be used in riparian areas.
  - (i) To avoid spreading of (aquatic) invasive plant species any equipment utilized around wetlands will be thoroughly cleaned.
  - (j) Excavation in wetlands will be carried out by an excavator operating from a dry stable surface, when possible, to minimize sediment generation.
  - (k) Ditches will not drain directly to wetlands. Flows must be directed away from wetlands by take-off ditches for dissipation through settling ponds and/or adjacent vegetated areas.

#### **4.6.2 Watercourses and Riparian Areas**

Federal and provincial legislative requirements associated with the protection of watercourses and riparian areas are outlined in *Alberta Transportation's Environmental Management System Manual*. The following practices will be implemented to prevent or minimize impacts to watercourses and riparian areas:

- (a) The Contractor will minimize any disturbance to aquatic resources during construction.
- (b) Instream construction will be undertaken according to the conditions provided in Authorizations/Approvals/Operations Statements issued by DFO and AENV. Should delays occur and construction cannot be completed within the timing window specified DFO and AENV will be contacted.
- (c) Watercrossing construction will be postponed if excessive flows or flood conditions are present or anticipated. Activity will resume when water levels have subsided or equipment suitable for conditions is deployed.

- 
- (d) A photographic record will be made of all significant features to be protected or restored.
  - (e) Grading will be controlled as much as practical near watercourses. No windrowed or fill material will be placed in the watercourses during grading.
  - (f) Retain an undisturbed vegetation buffer between the construction site and watercourse to reduce the potential for sedimentation. The buffer will be fenced using silt fence or a similar barrier, to prevent equipment and machinery from encroaching into protected areas.
  - (g) Stumps will be left intact on approach slopes and stream banks, where feasible, to provide surface stability.
  - (h) Watercourses will be crossed, as closely as feasible, perpendicular to the natural flow of water.
  - (i) Where suitable topsoil exists on stream banks or approach slopes, it will be stripped and stockpiled separately.
  - (j) Channel restriction will be permitted only as identified in the relevant DFO, NWPP and AENV Authorizations/Approvals.
  - (k) Pump capacity will be adequate for diverting the necessary flow volumes. Adequate backup pumps and contingency measures will be in place in case of pump failure. Pumped water will be returned to the waterbody in the same or better quality. The Contractor will be required to follow the Department's turbidity specification.
  - (l) A fuel/deleterious substance spill response plan will be in place. An emergency spill response kit will be kept on-site during construction.
  - (m) Wherever possible, biodegradable oils and lubricants will be used in equipment.
  - (n) If cast-in-place concrete is required, all work must be done in the dry and be isolated from water for a minimum of 48 hours.
  - (o) Cleanup of watercourse areas will commence immediately following final contouring and erosion control operations. Cleanup will be completed as quickly as practicable (within instream construction timing guidelines).
  - (p) Where rock is required, streambeds will be backfilled with washed rock material or other approved clean substrate, preferably river run stone rather than angular.

- 
- (q) Riprap (if used for stabilizing abutments) will not alter channel width and will be free of silt.
  - (r) ESC measures will be implemented prior to work. The ESC measures will be inspected regularly. Design Guidelines for Erosion and Sediment Control for Highways (Alberta Transportation, 2003) will be followed.
  - (s) To avoid spreading of invasive plant species all equipment will be cleaned of mud and vegetation. All equipment to be used will be free of aquatic invasive species.
  - (t) Drainage and siltation control devices will be installed prior to clearing vegetation.
  - (u) Access and approaches to water crossings will be stabilized to support the anticipated traffic.
  - (v) Riparian areas along major watercourse banks will be revegetated in appropriate areas according to detailed design, or as otherwise stated in Authorizations/ Approvals issued by DFO and AENV. Fertilizer will not be used in riparian areas.
  - (w) If seeding cannot occur until the following spring appropriate erosion control measures will be implemented to provide short-term ground cover.

#### **4.7 Fish and Fish Habitat**

Fish and fish habitat are regulated by provincial and federal legislation. Federal and provincial legislative requirements associated with the protection of fish and fish habitats are outlined in *Alberta Transportation's Environmental Management System Manual*. The following practices will be implemented to prevent or minimize impacts to fish and fish habitat.

- (a) The Contractor will minimize any disturbance to aquatic resources during construction.
- (b) The Department's specifications for fish capture and release will be adhered to if fish salvage is required.
- (c) The Department's turbidity specification will be followed.
- (d) Equipment will be refuelled and serviced to ensure that deleterious substances do not enter any watercourse. Equipment operating near any watercourse will be clean and free of external oil, grease, mud, or fluid leaks.
- (e) Appropriate precautions will be taken to ensure that deleterious substances will not be placed in any location where the materials may enter a watercourse.
- (f) All waste materials will be disposed of above the high water mark and located such that they do not re-enter any waterbody.

- 
- (g) Instream worksites will be isolated from flowing water. Every reasonable effort will be made to minimize the duration of instream works.
  - (h) If dewatering is required, water returning to the watercourse will be of equal or better quality than that of the water in the watercourse it is being returned to.
  - (i) A fuel/deleterious substance spill response plan will be in place. An emergency spill response kit will be kept on-site during construction.
  - (j) Riprap armoring will be clean (free of deleterious substances) and of sufficient size to resist displacement during design flood events.
  - (k) If a pump is used, the inlet will be screened in accordance with DFO's Freshwater Intake End-of Pipe Screen Guidelines. The outlet will have a diffuser or will be placed in a location that is not subject to erosion from the outflow.

#### **4.8 Air Quality Management**

Requirements associated with air quality management are outlined in *Alberta Transportation's Environmental Management System Manual*. The following practices will be implemented to prevent or minimize dust impacts:

- (a) When required, measures will be used to reduce dust along the ROW.
- (b) Mud will be removed from paved roads and access points.
- (c) As practicable, soil stockpiles will be placed in areas least prone to impact from prevailing winds.
- (d) When required, dust generating construction activities will be suspended during periods of excessive winds if dust suppression measures are not working adequately.
- (e) Exposed areas prone to wind erosion will be stabilized.

#### **4.9 Handling and Storage of Petroleum, Oil, Lubricant and other Chemicals**

Requirements associated with the handling and storage of petroleum, oil and other chemicals are outlined in *Alberta Transportation's Environmental Management System Manual*. The following practices will be implemented to prevent or minimize petroleum, oil, lubricant and chemical impacts:

- (a) Equipment will be mechanically sound with no oil or gas leaks. Equipment will be frequently inspected and leaks will be repaired immediately.

- 
- (b) Fuelling, storage and servicing of vehicles and construction equipment will be conducted so that deleterious substances cannot enter a watercourse, drainage ditch, or areas with a high water table.
  - (c) Spill clean-up materials will be accessible and maintained in the areas of fuel and chemical storage.
  - (d) All tanks will be protected from collision damage.
  - (e) Fuel storage areas and transfer lines will be clearly marked or barricaded to prevent damage from vehicles.
  - (f) Drum storage areas will be marked or fenced with temporary fence to avoid impacts.
  - (g) All spills will be cleaned up immediately and reported according to the procedures in the ECO Plan.

#### **4.10 Management of Waste**

Requirements associated with the management of waste are outlined in *Alberta Transportation's Environmental Management System Manual*. The following practices will be implemented to prevent or minimize waste management impacts.

- (a) There will be no burning of wastes on the project site.
- (b) Non-recyclable, non-hazardous construction wastes will be removed from site on an as required basis for disposal at an approved waste disposal site.
- (c) Waste oils, lubricants and rags will be stored in a labelled tank or drum and recycled/disposed at an approved facility.

#### **4.11 Constructing, Operating and Reclaiming Borrow Excavations**

Requirements associated with the construction, operation and reclamation of borrow excavations are outlined in *Alberta Transportation's Environmental Management System Manual and the Department's specifications manuals*. The following practices will be implemented to prevent or minimize impacts to the landscape, vegetation and soils at borrow excavations:

- (a) Site-specific soil handling plans will be developed and implemented.
- (b) All equipment will be inspected and cleaned to prevent the spread of weeds.

- 
- (c) Topsoil from borrows and pits will be managed as per section 4.5 of this document.
  - (d) Weeds will be controlled on disturbed areas and soil stockpiles.
  - (e) Vegetation will be re-established so that it is compatible with original or adjacent vegetation.
  - (f) Implement appropriate erosion and sediment control measures as per section 3.1 of this document.

#### **4.12 Operating Concrete Batch Plants**

Requirements associated with operating concrete batch plants are outlined in *Alberta Infrastructure and Transportation Environmental Management System Manual*. The Contractor will comply with the Code of Practice For Concrete Producing Plants ensuring that requirements for pollution control technology, operation, record keeping and reporting are met. The Contractor will identify sensitive environmental receptors and incorporate erosion and sediment control plans, waste management activities, or any other relevant environmental measures into the ECO Plan as required.

#### **4.13 Operating Asphalt Plants**

Requirements associated with operating asphalt plants are outlined in *Alberta Infrastructure and Transportation Environmental Management System Manual*. The Contractor will comply with the Code of Practice For Asphalt Paving Plants ensuring that the paving plant is equipped with pollution control technology that meets the requirements of the Code. The Contractor will identify sensitive environmental receptors and incorporate erosion and sediment control plans, waste management activities, or any other relevant environmental measures into the ECO Plan as required.

#### **4.14 Construction and Operation of Work Camps**

All necessary permits and/or approvals will be obtained prior to construction of work camps. These permits may be related to solid and liquid waste disposal, water supply, sewage treatment, development control and crown lands.

### **5.0 MONITORING AND INSPECTION**

#### **5.1 Self Regulatory Inspection**

The Contractor will be required to regularly conduct an inspection program to ensure commitments of the EPP, ECO Plan and regulatory requirements are fulfilled and maintained during construction, and that preventative and protective environmental measures are in



---

place and functioning properly throughout construction. A summary of the inspection will be documented following each inspection and will include recommendations for any required mitigative or repair measures.

### **5.1.1 Construction Monitoring**

Monitoring activities will include, but are not limited to the following:

- (a) Clearing activities and disposal areas will be examined for evidence of erosion, siltation, or potential for erosion and siltation.
- (b) All ESC measures are to be inspected to ensure they have been installed in an effective location and are in good working order.
- (c) Waste management and hazardous material storage will be inspected to ensure compliance with regulations and the ECO Plan.
- (d) Access roads will be inspected to ensure they are properly maintained.
- (e) Water flow, levels, velocity and quality parameters (e.g. turbidity and suspended solids) will be monitored to ensure levels are within required limits.
- (f) Environmental conditions will be monitored to ensure that all regulatory requirements and Department specifications are being adhered to.
- (g) Monitoring records will be maintained and proposed changes and alterations will be discussed prior to implementation.
- (h) Dust conditions will be monitored and appropriately handled.
- (i) Records as required by any environmental authorization, permit, licence, approval, or the ECO Plan shall be kept on site.

### **5.1.2 Post Construction Monitoring**

Any monitoring required as a condition of regulatory authorizations/approvals will be undertaken as required. Inspection activities will be documented and will include recommendations for any required mitigative or repair measures.

Monitoring activities will include, but are not limited to the following:

- (a) Revegetation success along the ROW and reclaimed areas.
- (b) Stream banks will be inspected for revegetation success and for evidence of instability and/or erosion.
- (c) Permanent ESC will be inspected to ensure proper function.

- 
- (d) Road ditches and medians, river valley escarpments and road embankments will be monitored for evidence of erosion.

#### **4.2 ECO Plan Audits**

ECO Plan audits are conducted by a third party auditor on a sample of projects throughout Alberta to verify, and potentially improve environmental performance. The purpose of the audit is to determine if Department specifications and guidelines are being adhered to and to survey the level of compliance to relevant environmental legislation.

The following items will be inspected or reviewed at project sites to determine compliance with regulatory conditions and conformance with the ECO Plan. Objective evidence will be obtained by interviewing relevant project personnel, reviewing records and documents and observing work site activities.

- determine if work site ECO Plans are being properly implemented and maintained;
- assess if the environmental requirements within the construction contract and the consultant Service Agreement are being adhered to;
- survey work site activities for compliance to environmental legislation; and
- assess if the requirements within relevant department specifications are being adhered to.

### **Appendix A – Project Specific Environmental Measures**

The Functional Planning Consultant and/or Design Consultant will identify any additional project-specific environmental measures to be implemented in Appendix A. The Contractor must be aware of these requirements. The Contractor will address items listed in Appendix A in the project-specific ECO Plan.